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NORTH ATLANTIC ICEBERGS.

In the daily papers, at intervals, more or less widely separated, we may see notices of icebergs passed by ships on their passages to and from the ports of North America. Not unfrequently a thrilling account reaches us of shipwreck, suffering, and sad loss of life, caused by some ill-fated vessel colliding with an iceberg and sinking in mid-ocean. Occasionally, some noble ship, replete with all modern improvements, under the command of a skilful navigator, carrying a precious freight of eager hearts and willing hands to their Eldorado of the Far West, sails from our shores. Nothing more is heard of her. In a little while she is posted at Lloyd's as missing, and a total loss. Her insurance is paid; and except to a few hearts at home bewailing their loss, her fate fades away in oblivion.

Few landsmen would, however, be able to infer from these necessarily crude and fragmentary paragraphs of the newspapers the great risks which are run in all seasons of the year by passengers and crews in the North Atlantic. The most important dangers are icebergs, fogs, and derelict vessels. Icebergs are more especially to be met with in this ocean from the middle of February to the commencement of July. The barrier of northern ice is broken up by the increasing power of the sun's rays as he marches onwards in his apparent path towards the summer solstice, attaining day by day a greater northern declination. Far to the north, in those awful ice-bound regions within the arctic circle where so many brave men have perished, each glacier protrudes an icy mass beyond the land and resting on the water. In course of time the extremity is wrenched violently off by the upward-bearing pressure of the sea. After a few convulsive somersaults, the resulting iceberg, in all its grandeur, floats placidly in its new element, and is now free to be acted on by the forces of wind and current. The bergs are borne southward by the Great Arctic or Labrador current, which vast body of water washes the east coast of North America from Labrador to Florida, and constitutes what is known to meteorologists as the 'cold wall.' Huge masses of ice or ice-islands are borne along on its broad bosom, mixed with smaller icebergs and field-ice. Icebergs and field-ice are formed in quite distinct ways. A berg, as we have seen, has its origin as a glacier probably far inland, and moves downward to the sea as a component part of the glacier; whereas field-ice is formed on the surface of the sea during the polar winter. Side by side with the arctic current flows the warmer water of the Gulf-stream. The direction of the Gulf-stream is, however, opposite to that of the arctic current, and it is more remote from the American coast. So sudden is the change in the temperature of the sea-surface when crossed by these currents, that the temperature of the water at the extreme ends of a vessel has been found to differ by from twenty to thirty degrees.

The influence of these two great rivers in the ocean is very noticeable when we compare the climates of two places, both equally distant from the equator, but separated from each other by the wide expanse of the Atlantic. The Americans have the cold current hugging their coast, thus increasing the severity of their winter; while the warmer water of the Gulf-stream stretching across in a north-easterly direction from about Cape Hatteras towards the west coast of Ireland, tends directly or indirectly to ameliorate the rigour of our climate. In March 1883 the Dundee whalers reached a point in latitude seventy-four degrees thirty minutes north, longitude four degrees thirty minutes east; while at the same time the harbours of America were impenetrable by reason of ice even as low down as the latitude of Bordeaux. Icebergs have been observed aground on the Banks of Newfoundland where the deep-sea sounding lead showed that bottom had been reached at a depth of six hundred and fifty feet.

During the past two or three years, many large icebergs and much field-ice, hundreds of miles in extent, have been met with in latitude forty-two degrees north. Many of these bergs attained a height of three hundred feet above the level of the sea. When we remember that but one-ninth of the volume of a berg is exposed to view, it would appear that the total altitude may have been, roughly speaking, about two thousand seven hundred feet. They have been fallen in with in the North Atlantic as early as January and as late as September. In March, a vessel has been jammed so firmly in the ice in latitude forty-four degrees north, longitude forty-five degrees west, as to enable her master to enjoy the luxury of a walk on the ice in mid-ocean. Icebergs have been seen richly laden with stones, earth, and other substances, which they deposit gradually on the bed of the ocean, perhaps for geologists of future ages to ponder over.

Occasionally, icebergs are the carriers of more interesting objects. In June 1794, Her Majesty's ships *Dædalus* and *Ceres* passed a very high and dangerous ice-island on which a ship was stranded. In June 1845, in latitude forty-six degrees north, longitude forty-seven degrees west, the *Perthshire* passed an ice-island thirty miles long, and on the north end was a ship high and dry with her crew; but no assistance could be afforded them. In April 1851, the *Renovation*, in latitude forty-five degrees thirty minutes north, on the edge of the Grand Bank, passed a very large berg, on which were two three-masted ships high and dry. They had apparently been made snug and secure at some previous time for winter-quarters in the arctic regions. These two vessels were supposed by some to have been the *Erebus* and *Terror* of Franklin's long-lost expedition, though later tidings do not support this supposition. In May 1883, the *City of Lincoln* passed twenty-seven large bergs in latitude forty-four degrees north, longitude forty-eight degrees west, with many polar bears on them. The *Magdalene*, ten days previously, but two degrees farther to the eastward, had passed tremendous bergs, like islands, with many arctic animals on them. In April, a large berg was seen with a hut on it; and on the 28th of the same month, the *Glamorgan* passed more than one hundred bergs with numerous bears on them. The ice was two hundred and sixty miles in width. Probably, these animals would exist on fish and seals. Dr Scoresby once counted five hundred bergs at one time in the polar seas. A steamer has passed as many as three hundred during her passage across the Atlantic.

There is scarcely anything more grandly beautiful and majestically impressive than a large berg seen under favourable conditions. It is a sight hardly to be reproduced on the canvas of the painter or to be portrayed in words. Its stately domes, its glittering pinnacles, its fairy-like architecture, its peculiar sea-green tint, the miniature cascades, all conspire to hold captive the senses with a feeling of awe. They are, however, as treacherous as beautiful, being extremely dangerous to approach except at a respectable distance. Owing to the constant melting of the ice, the bergs are always changing their form. Their centre of gravity becomes displaced; they topple over, and woe betide the unfortunate vessel close at hand! If the bergs were easily distinguishable, the mariner would have little to fear. This is not the case. They are generally shrouded in mist, and are met with in latitudes where dense fog is prevalent. The thermometer gives but imperfect indications of the presence of ice. With the utmost vigilance, bergs are close to the ship before being seen. The passenger in his warm berth can hardly realise the intense strain on the senses of the captain and officers at such times.

The Meteorological Office is informed, by telegram from America, of the exact position of bergs passed by steamers on their outward passage to New York. This information is published in the daily papers for the immediate benefit of the mariner. The Admiralty place on their charts the limits within which ice is likely to be met; whilst the American government publish monthly charts in which they embody all the reports of ice met with up to date of going to press. It is a matter of wonder and sincere thankfulness that in this iron age, when time is more than ever money, out of the large number of vessels carrying passengers across the tracks of these unwelcome pests of the deep, so few casualties occur.

This year, icebergs have been unusually numerous and very far east for the time of year. At Quebec, on the 10th of May, as many as three steamers were behind time, owing to the fact that the unprecedentedly heavy ice had blocked the entrance to the Gulf of St Lawrence. Such an occurrence has hitherto been unknown in the annals of the port. Six sailing-ships bound for Quebec were totally lost, and eight steamers seriously damaged, by collision with icebergs. The barque *Maranee* foundered with all hands except the captain and two seamen. The survivors, with a few biscuits to sustain life, were eighteen days in an open boat, surrounded by icebergs, and exposed to the inclemency of an almost arctic sky. The screw steamer *Sarmatian* got in the ice on the 1st of May, and remained fast till the 6th. The ice was solid as far as the eye could see, extending completely across the entrance of the Gulf of St Lawrence. The screw steamer *City of Berlin*, at thirty-five minutes past three A.M. on the 19th, ran stem on to an immense berg, doing damage estimated at five thousand pounds. Many tons of ice fell on her deck, crashing through into the hold. A dense fog prevailed at the time. On the 28th, the screw steamer *Brooklyn* collided with a large iceberg in a thick fog, when much ice fell on deck, though happily no one was injured.

Some hours after, the fog being still dense, it was discovered that the ship had passed between two large bergs. The whole of these steamers escaped foundering, owing to their being divided into water-tight compartments.

A HOUSE DIVIDED AGAINST ITSELF.

CHAPTER XXV.—CONTINUED.

'If that is what you think,' she said, her voice tremulous with agitation and pain, pulling on her gloves with feverish haste, 'perhaps it will be better for me to go away.'

Mrs Cavendish turned round upon her with a start of astonishment. Through the semi-darkness of that London day, which was not much more than twilight through the white curtains, the elder woman looked round upon the girl, quivering with indignation and resentment, to whom she had supposed herself entitled to say what she pleased without fear of calling forth any response of indignation. When she saw the tremor in the little figure standing against the light, the agitated movement of the hands, she was suddenly brought back to herself. It flashed across her at once that the sudden withdrawal of Frances, whom she had welcomed so warmly as her brother's favourite child, would be a triumph for Lady Markham, already no doubt very triumphant in the unveiling of her husband's hiding-place and the recovery of the child, and in the fact that Frances resembled herself, and not the father. To let that enemy understand that she, Waring's sister, could not secure the affection of Waring's child, was something which Mrs Cavendish could not face.

'Go—where?' she said. 'You forget that you have come to spend the day with me. My lady will not expect you till the evening; and I do not suppose you can wish to expose your father's sister to her remarks.'

'My mother,' said Frances with an almost sob of emotion, 'must be more to me than my father's sister. Oh, aunt Charlotte,' she cried, 'you have been very, very hard upon me. I lived as a child lives at home till Constance came. I had never known anything else. Why should I have asked questions? I did not know I had a mother. I thought it was cruel, when I first heard; and now you say it was my fault.'

'It must have been more or less your fault. A girl has no right to be so simple. You ought to have inquired; you ought to have given him no rest; you ought'——

'I will tell you,' said Frances, 'what I was brought up to do: not to trouble papa; that was all I knew from the time I was a baby. I don't know who taught me—perhaps Mariuccia, perhaps, only—everything. I was not to trouble him, whatever I did. I was never to cry, nor even to laugh too loud, nor to make a noise, nor to ask questions. Mariuccia and Domenico and every one had only this thought—not to disturb papa.—He was always very kind,' she went on, softening, her eyes filling again. 'Sometimes he would be displeased about the dinner, or if his papers were disturbed. I dusted them myself, and was very careful; but sometimes that put him out. But he was very kind. He always came to the loggia in the evening, except when he was busy. He used to tell me when my perspective was wrong, and laugh at me, but not to hurt.—I think you are mistaken, aunt Charlotte, about papa.'

Mrs Cavendish had come a little nearer, and turned her face towards the girl, who stood thus pleading her own cause. Neither of them was quick enough in intelligence to see distinctly the difference of the two pictures which they set before each other—the sister displaying her ideal of a delicate soul wounded and shrinking from the world, finding refuge in the tenderness of his child; the daughter making her simple representation of the father she knew, a man not at all dependent on her tenderness, concerned about the material circumstances of life, about his dinner, and that his papers should not be disturbed—kind, indeed, but in the easy, indifferent way of a father who is scarcely aware that his little girl is blooming into a woman. They were not clever enough to perceive this; and yet they felt the difference with a vague sense that both views, yet neither, were quite true, and that there might be more to say on either side. Frances got choked with tears as she went on, which perhaps was the thing above all others which melted her aunt's heart. Mrs Cavendish gave the girl credit for a passionate regret and longing for the father she loved; whereas Frances in reality was thinking, not so much of her father, as of the serene childish life which was over for ever, which never could come back again with all its sacred ignorances, its simple unities, the absence of all complication or perplexity. Already she was so much older, and had acquired so much confusing painful knowledge—that knowledge of good and evil, and sense of another meaning lurking behind the simplest seeming fact and utterance, which when once it has entered into the mind, is so hard to drive out again.

'Perhaps it was not your fault,' said Mrs Cavendish at last. 'Perhaps he had been so used to you as a child, that he did not remember you were grown up. We will say no more about it, Frances. We may be sure he had his reasons. And you say he was busy sometimes. Was he writing? What was he doing? You don't know what hopes we used to have, and the great things we thought he was going to do. He was so clever; at school and at college, there was nobody like him. We were so proud of him! He might have been Lord Chancellor. Charles always says so, and he is not partial, like me; he might have been anything, if he had but tried. But all the spirit was taken out of him when he married. Oh, many a man has been the same. Women have a great deal to answer for. I am not saying anything about your mother. You are quite right when you say that is not a subject to be discussed with you.—Come down-stairs; luncheon is ready; and after that we will go out.—We must not quarrel, Frances. We are each other's nearest relations, when all is said.'

'I don't want to quarrel, aunt Charlotte. O no; I never quarrelled with any one. And then you remind me of papa.'

'That is the nicest thing you have said. You can come to me, my dear, whenever you want to talk about him, to ease your heart. You can't do that with your mother; but you will never tire me. You may tell me about him from

morning to night, and I shall never be tired.—Mariuccia and Domenico are the servants, I suppose? and they adore him? He was always adored by the servants. He never gave any trouble, never spoke crossly. Oh, how thankful I am to be able to speak of him quite freely! I was his favourite sister. He was just the same in outward manner to us both; he would not let Minnie see he had any preference; but he liked me the best, all the same.'

It was very grateful to Frances that this monologue should go on; it spared her the necessity of answering many questions which would have been very difficult to her; for she was not prepared to say that the servants, though faithful, adored her father, or that he never gave any trouble. Her recollection of him was that he gave a great deal of trouble, and was 'very particular.' But Mrs Cavendish had a happy way of giving herself the information she wanted, and evidently preferred to tell Frances a thousand things, instead of being told by her. And in other ways she was very kind, insisting that Frances should eat at lunch, that she should be wrapped up well when they went out in the victoria, that she should say whether there was any shopping she wanted to do. 'I know my lady will look after your finery,' she said; 'that will be for her own credit, and help to get you off the sooner; but I hope you have plenty of nice underclothing and wraps. She is not so sure to think of these.'

Frances, to save herself from this questioning, described the numberless unnecessaries which had been already bestowed upon her, not forgetting the pearls and other ornaments, which, she remembered with a quick sensation of shame, her mother had told her not to speak of, lest her aunt's liberalities should be checked. The result, however, was quite different. Mrs Cavendish grew red as she heard of all these acquisitions, and when they returned to Portland Place, led Frances to her own room, and opened to her admiring gaze the safe, securely fixed into the wall, where her jewels were kept. 'There are not many that can be called family jewels,' she said; 'but I've no daughter of my own, and I should not like it to be said that you had got nothing from your father's side.'

Thus it was a conflict of liberality, not a withholding of presents, because she was already supplied, which Frances had to fear. She was compelled to accept with burning cheeks, and eyes weighed down with shame and reluctance, ornaments which a few weeks ago would have seemed to her good enough for a queen. Oh, what a flutter of pleasure there had been in her heart when her father gave her the little necklace of Genoese filigree, which appeared to her the most beautiful thing in the world. She slipped into her pocket the cluster of emeralds her aunt gave her, as if she had been a thief, and hid the pretty ring which was forced upon her finger, under her glove. 'Oh, they are much too fine for me. They are too good for any girl to wear. I do not want them, indeed, aunt Charlotte!'

'That may be,' Mrs Cavendish replied; 'but I want to give them to you. It shall never be said that all the good things came from her and nothing but trumpery from me.'

Frances took home her spoils with a sense of humiliation which weighed her to the ground. Before this, however, she had made the acquaintance of Mr Charles Cavendish, the great Q.C., who came into the cold drawing-room two minutes before dinner in irreproachable evening costume, a well-mannered, well-looking man of middle age, or a little more, who shook hands cordially with Frances, and told her he was very glad to see her. 'But dinner is a little late, isn't it?' he said to his wife. The drawing-room looked less cold by lamplight; and Mrs Cavendish herself, in her soft velvet evening-gown with a good deal of lace—or perhaps it was after the awakening and excitement of her intercourse with Frances—had less the air of being like the furniture, out of use. The dinner was very luxurious and dainty. Frances, as she sat between husband and wife, observing both very closely without being aware of it, decided within herself that in this particular her aunt Charlotte again reminded her of papa. Mr Cavendish was very agreeable at dinner. He gave his wife several pieces of information indeed which Frances did not understand, but in general talked about the things that were going on, the great events of the time, the news, so much of it as was interesting, with all the ease of a man of the world. And he asked Frances a few civil and indeed kindly questions about herself. 'You must take care of our east winds,' he said; 'you will find them very sharp after the Riviera.'

'I am not delicate,' she said; 'I don't think they will hurt me.'

'No, you are not delicate,' he replied, with what Frances felt to be a look of approval; 'one has only to look at you to see that. But fine elastic health like yours is a great possession, and you must take care of it.' He added with a smile, a moment after: 'We never think that when we are young; and when we are old, thinking does little good.'

'You have not much to complain of, Charles, in that respect,' said his wife, who was always rather solemn.

'Oh, nothing at all,' was his reply. And shortly after, dinner by this time being over, he gave her a significant look, to which she responded by rising from the table.

'It is time for us to go up-stairs, my dear,' she said to Frances.

And when the ladies reached the drawing-room, it had relapsed into its morning aspect, and looked as chilly and as unused as before.

'Your uncle is one of the busiest men in London,' said Mrs Cavendish with a scarcely perceptible sigh. 'He talked of your health; but if he had not the finest health in the world, he could not do it; he never takes any rest.'

'Is he going to work now?' Frances asked with a certain awe.

'He will take a doze for half an hour; then he will have his coffee. At ten he will come up-stairs to bid me good-night; and then—I dare not say how long he will sit up after that. He can do with less sleep than any other man, I think.' She spoke in a tone that was full of pride, yet with a tone of pathos in it too.

'In that way, you cannot see very much of him,' Frances said.

'I am more pleased that my husband should

be the first lawyer in England, than that he should sit in the drawing-room with me,' she answered proudly. Then, with a faint sigh: 'One has to pay for it,' she added.

The girl looked round upon the dim room with a shiver, which she did her best to conceal. Was it worth the prize, she wondered? the cold dim house, the silence in it which weighed down the soul, the half-hour's talk (no more) round the table, followed by a long lonely evening. She wondered if they had been in love with each other when they were young, and perhaps moved heaven and earth for a chance hour together, and all to come to this. And there was her own father and mother, who probably had loved each other too. As she drove along to Eaton Square, warmly wrapped in the rich fur cloak which aunt Charlotte had insisted on adding to her other gifts, these examples of married life gave her a curious thrill of thought, as involuntarily she turned them over in her mind. If the case of a man were so with his wife, it would be well not to marry, she said to herself, as the inquirers did so many years ago.

And then she blushed crimson, with a sensation of heat which made her throw her cloak aside, to think that she was going back to her mother, as if she had been sent out upon a raid, laden with spoils.

(*To be continued.*)

A SHIP-RAILWAY.

Probably at no period of the world's existence has a greater feat of engineering been attempted than that of enabling ships to pass across the Isthmus of Panama. Every one has heard of the Panama Canal, which has been commenced under the direction of the great French engineer, M. de Lesseps; but it is not generally known that there exist two rival schemes: a canal across the Nicaraguan portion of the Isthmus, and a ship-railway from the Gulf of Mexico to the shores of the Pacific. A few words as to the first of these, namely, the Panama Canal, will not be altogether out of place.

Many conflicting statements have been made as to the time when we may reasonably expect it to be completed. A few months ago, at a public dinner, M. de Lesseps fixed 1888 as the date of completion; but at the present rate of progress it would take thirty-three years to connect the two seas. One of the greatest difficulties in connection with this particular scheme is the Chagres River, which frequently floods the surrounding country for miles. To meet this difficulty, a dam some hundred and fifty feet high will probably be erected, and in connection with it a large canal several miles in length. It is not difficult to comprehend the severity of the floods in that country, when we remember that the rainfall sometimes reaches six inches in twenty-four hours. The original estimate for the canal was thirty millions sterling; but as, owing to the badness of the climate, the men have refused to work except for considerably increased wages, it is highly probable that the total cost of the undertaking will reach fifty million pounds. When finished, the canal will certainly bring a large revenue to the Company; and so much money has been already spent on the works, which would be lost were they abandoned, that there can be but little doubt the canal will be ultimately completed.

With regard to the Nicaraguan scheme, little need be said. It was probably started on political grounds, which are not suitable for discussion here; and not long since, the United States Senate refused to ratify the treaty which it was proposed to conclude with the republic of Nicaragua with reference to the construction of the canal.

The Ship-railway, which may appear the greatest and most difficult undertaking of all three, will, it is said, cost but fifteen million pounds—just half the sum originally estimated for the canal. Though the scheme is only now coming to the front, so long ago as 1881, Captain James Eads, the well-known engineer of the Mississippi navigation works, secured from the Mexican government, on favourable terms, the right to construct a ship-railway and to hold it for ninety-nine years. Should the railway ever be completed, Captain Eads, for his services to the country, will receive a grant of one million acres of land. The lifting of large ships out of the water is no novelty, and is done in the docks of most or all maritime nations. For this purpose, a number of pontoons are placed round the vessel to be lifted, and filled with water to such an extent that they sink below the level of the ship's keel. Strong beams are then placed under the vessel, their ends resting on the pontoons, after which pumps are set to work; and as the water is exhausted from the pontoons, they rise, and with them the great ship, until it is high and dry, with every part from bulwarks to keel above the water. By a system such as this, Captain Eads proposes to raise vessels and place them on a huge 'trolly,' running on twelve parallel rails. On these twelve lines of metal, six engines, each capable of drawing two thousand tons, will work, and the six, or fewer, according to the burden, will—so it is anticipated—slowly drag huge ships from one sea to another, across the hundred and thirty-four miles of land. Perhaps the greatest difficulty will be in providing against any straining or breakage of the ship, owing to the weight of the cargo or ballast. When a vessel is in the sea, the pressure of the water supports the sides of the hull, and enables it to contain a heavy cargo; but out of water, the condition is changed, and some artificial support must be provided. As the ships are raised, therefore, they will have to be placed in cradles, and a great number of these will be required, to accommodate the varying size of vessels.

The scheme is a bold one, but is certainly not a mechanical impossibility. As to the question whether it will be remunerative or not, that would depend to a great extent on the Panama Canal. Should the ship-railway be successfully completed many years in advance of the canal, it will during these years produce a large revenue. Even after that period, presuming that much less capital is spent on the railway than on the canal, the former would no doubt successfully compete with the latter, and the rivalry which would exist would greatly benefit ship-owners. It has been expressly agreed

between America and England, that if any canal should be made across the isthmus, England should have an equal voice with America in its control. This treaty would probably not apply to the ship-railway, of which America would, it is believed, have the sole control. America being greatly interested in the matter, there is little doubt that in a few years' time this piece of engineering will be an established fact.

SWEET GILLIAN.

CHAPTER V.—CONCLUSION.

At six o'clock on the evening of the famous 18th of June 1815, just as the setting sun was for the first time penetrating the heavy masses of rain-clouds, Lionel's regiment formed one of the thirteen red-coated squares of English infantry which had for nearly half an hour been steadily receiving the furious charges of Milhaud's cuirassiers on the plateau of Mont St Jean. Of these thirteen squares, seven were but mere fragments, groups of desperate men round a tattered standard fighting over a breast-high rampart of dead bodies. Lionel's regiment, although it had had plenty of work, was still comparatively intact, and the enthusiastic flush which had lightened up the faces of the young recruits as they tramped through Hingleton village three weeks before, was still as vivid, although fury and excitement had taken the place of the joy which was then on every face. At one moment, indeed, matters had looked bad for them. A squadron of the enemy's dragoons had driven the side of the square in until it formed a semicircle. Some of the youngsters were losing their heads, were striking wildly, and breaking the rank. Lionel, smoke-begrimed, bleeding, his shako torn off, and one of his buff epaulettes hanging by a shred, saw an officer cut down by a blow aimed at him, and only the thundered commands of the old colonel prevented the temporary confusion from being something worse. Suddenly, a ringing cheer was heard above the roar of battle: the cuirassiers heard it too, and turned bridles; the semicircle straightened itself again, and but one word was wanted to send the impetuous youngsters rushing down the terrible hill upon the discomfited foe.

The smoke lifted, and Lionel for the first time saw something of what had been going on around him. He had seen Badajos, Salamanca, and Vittoria, but nothing to equal in horror the scene which was spread before his eyes along the undulating ridges of the plateau. The square on his right had suffered more severely than his own; indeed, the number of bodies seemed to exceed the number of survivors; but his attention was diverted from the contemplation of horrors by the appearance of the commanding officer, a gray-haired veteran like his own, whose face seemed familiar to him. He had, however, but a few seconds to look about him, for the blare of bugles again broke the lull, and the word was passed that the retreat of the enemy had been but a feint, and that the two squares were to reunite. Scarcely had the movement been effected, before the hurricane of horses and men was on them again; but the recruits had had breathing-time; now, it was no mere passive, wall-like resistance; they dashed out in spite of commands and entreaties, met the enemy half-way, discharged their muskets, and fell to with butt-end and bayonet, only pausing to open back and allow the artillery to fire. In ten minutes the finest cavalry of France—Kellermann's dragoons and Milhaud's cuirassiers—were in flight, for, in addition to the red-coated infantry in front, Somerset with his heavy cavalry had burst on their flank. The squares rushed forward with such a cheer as had not been heard that day. Nothing could hold them in, nothing could hold against them; here and there, some of the enemy's horsemen made a desperate plunge to recover lost ground; but it was of no avail—they were shot, dragged down, bayoneted, trampled under hundreds of feet. In the midst of the fury of pursuit, Lionel felt a sharp sting in the left shoulder, and at the same moment a huge French cuirassier with a smoking pistol in hand fell pierced to the brain, and crushed young Gaskell in the fall.

Extricating himself with difficulty, and suffering intense pain, Lionel saw the regiment sweep past him, bugles sounding, drums beating, men cheering wildly, into the deepening dusk after the flying foe. Suddenly he heard a voice exclaim: 'Help! Englishmen, help!'

Straining his eyes in the direction whence the shout came, Lionel saw an officer on horseback sorely beset by three French dragoons, who had doubtless ridden through the squares and were striving to return. Seizing the sabre of the dead cuirassier, Lionel shouted with all his strength: 'All right, sir! Keep on a minute!' and dashed into the midst of the assailants, who, imagining that a formidable rescue had come, put spurs to their horses and fled. Lionel was just in time; for the poor old soldier, whom he now recognised as the colonel of the next square, whose face seemed familiar to him, was exhausted, and sank into his arms.

'Thanks, thanks!' murmured the colonel. 'Can't see your face; what's your name? I'll remember you. Go on; leave me here; I shall be all right.'

'I am Lionel Gaskell of Hingleton,' replied the young soldier.

The colonel raised his eyebrows. 'Lionel Gaskell of Hingleton!' he said faintly. 'Why, I thought he was dead long ago!'

Lionel remained beside the colonel on that awful field until evening became night, and a faint, watery moon threw a weird light upon the ghastly scene. In spite of his own pain, he contrived to bandage the colonel's arm, which had been slashed to the bone, and at intervals to moisten his lips with the contents of his water-bottle. In an hour's time, the country carts came and carried away the wounded into Brussels.

As the bell of St Gudule boomed midnight, one of these carts, into which the colonel had been lifted together with a dozen other groaning, writhing, mangled human beings, rolled through the Namur Gate into the city, Lionel walking by its side. Although midnight, there was more movement and noise than at mid-day; every

house was illuminated, from the hotels—now converted into hospitals—to the poorest beershops, wherein groups of native soldiers, who had rushed away at the first onset from the field of battle, were endeavouring to explain away the news they had brought of the utter overthrow of Wellington and Blücher! The streets were crowded with eager, excited, chattering, gesticulating townsfolk, amongst whom were soldiers of every branch of the English service, wandering about in search of their regiments, from which they had been separated in the rush and excitement of the final pursuit.

The cart in which was the colonel stopped at the church of the Augustines, now the post-office. Here the lamps and candles, which had been lighted for a grand thanksgiving mass, threw a soft glow upon a strange impressive scene—upon writhing forms, upon ghastly upturned faces, upon the figures of black-draped Sisters, who moved noiselessly amongst the heaps of ensanguined straw; and of surgeons busy at their dreadful work. Eleven hundred men, who had marched out at daylight full of hope and enthusiasm to the inspiring strains of military music, lay crowded here in every conceivable attitude of agony—moaning, shouting in their delirium strange battle-cries, sobbing like children, striking out as if in actual conflict—some of whom would sob and shout and strike no more. The scene at the Augustines was being enacted in every other public building of the city, for the long lines of country carts still rolled in, bringing friend and foe, Englishman and Frenchman, Prussian and Hanoverian; the boy recruit and the grizzled veteran, the humble drummer and the medalled staff officer, the gigantic Guardsman and the light *voltigeur*, until there was no room for more, and the dead man whose last breath had just been gasped, was hustled away to make room for the mangled living.

Lionel asked the colonel, who had somewhat recovered, if he had friends in Brussels, and receiving a faint negative shake of the head in reply, placed him gently on a heap of straw just vacated by a French lancer, and directing the attention of a Sister to him, went to the surgeon's table and had the ball extracted from his own shoulder. He was returning to the colonel's side, when a gentle hand was placed on his arm, and a soft voice uttered his name. Turning round with a start, he beheld—Gillian! There was no time for more than an astonished exclamation; but the eyes of the lovers thus strangely brought together spoke more eloquently than the most burning words.

'I am at the *Hôtel du Parc*,' she said hurriedly. 'I have been driven from home; but we shall meet again.'

Lionel could not speak. He felt that the girl had come hither for him, and for him alone; his heart was full, and tears blinded his eyes. But duty having recalled him to a sense of what was due to others, he conducted the girl to where the colonel was lying, and bidding her a whispered *au revoir*, hurried away to discover the whereabouts of his regiment.

Early the next morning, he called at the *Hôtel du Parc*, and found Gillian. On the sunlit veranda they sat and talked with all the glad enthusiasm of lovers re-united after a long sickening suspense. Gillian told him how since the departure of the regiment Edward Trent had been unceasing in his persecution, and how he had persuaded the squire to force a marriage—how she had fled from home, and alone had made her way to Brussels as a Sister of Mercy. Lionel, in turn, told her about the poaching affair and the trial, and asked who the old colonel was whose life he had saved, although he of course made no allusion to the act. And when Gillian replied that he was Colonel Adamthwaite, an old friend of the dead squire's, and her own protector and champion, the young man felt that, after all his weary waiting and ill-luck, the clouds were rifting.

'You will return home with him, Gillian, will you not?' asked Lionel. 'But do not allude to me. Edward Trent must be brought to justice; and if the colonel should mention my name, he would be warned, and enabled to escape. We are already under orders to return home, I believe; but you will probably be there before me. One more thing, dearest. You will hear of our arrival, and on the first day after, will you be at the old place at the old time?'

'I faithfully promise.'

Then they separated—Gillian to her work of mercy, Lionel to his regimental duties.

Three weeks after these events, Edward Trent and the squire were together in the study at Hingleton Hall. Matters between them were evidently not of an amicable nature, for the squire was striding up and down the little room, his hands thrust deep into his pockets, as was his wont when annoyed, his usually beaming genial face dark as thunder; whilst the lawyer, with a quill-pen crushed between his fingers, was standing with his teeth set and his eyes flashing.

'Very well, Trent,' said the squire, stopping short; 'you've heard my answer. Now clear off, and do your worst; or I shall risk the consequences, and put you out. You've driven my daughter away. God knows where she is!' Just as he said these words, through the open windows came the sounds of cheering, growing more and more distinct. Edward Trent turned pale. The squire's angry look brightened into one of joy; he rushed to the door. In a few moments there was a sound of many feet on the gravel-path and the roar of deafening cheers; and a carriage, dragged by a score of stalwart rustics, appeared, in which were seated Sweet Gillian and Colonel Adamthwaite.

There is no need to detail the scene which followed: how it was with the greatest difficulty that the squire could make his way through the crowd of enthusiastic villagers, all eager to shake hands with the squire's daughter and the old colonel; how the appearance of Edward Trent was greeted with a volley of hisses and groans; how, when silence was with difficulty restored, the colonel made a short, vigorous speech, thanking the folk for their reception, and informing them that it was by the merest chance that he was there to do so; how he described the gallantry of the old regiment in general, and of one hero, whom he dared not name yet, in particular. Then Sweet

Gillian, flushed with excitement and pleasure, but seeming ill and fatigued, leaning on the squire's arm, had to make a speech; and the steward brought out barrels of ale; and the cheering and health-drinking went on until some one with sharp ears declared that he heard distant music, whereupon a general rush was made for the village just in time to meet the head of the returning regiment as it swept round the parsonage corner.

Early the next morning, Gillian, who was unusually flushed and excited, said to the colonel, who was staying at the Hall for a few days: 'Colonel, shall we take one of our old walks together across the Park Meadow and back by the stables?'

'Yes, my dear, with all my heart,' replied the old gentleman. 'It will be quite a treat to smell a little pure, fresh English country air, and to see green hedges, after the atmosphere of Brussels.'

So they linked arm in arm, and crossing the lawn, struck straight down to the Park Meadow.

'I daresay the poachers have had some fine games since you've been away, colonel,' said Gillian.

'Confound them! Yes; I daresay they have, although at this time of the year there's precious little to be had worth the risk of two years in jail.—Why, dash my straps and buttons, if there isn't—— But I won't be hard on him.' So saying, he clenched his cane, and strode off straight to where a man clad in red uniform was reclining on the grass. Gillian followed, her heart almost leaping within her, for she knew very well who the intruder was, and for what purpose he had come.

At the colonel's appearance, the man, instead of bolting over the fence, arose, sprang to attention and saluted.

The colonel's old anti-poacher feeling was too strong for him to treat with calmness this cool impertinence. In spite of the generous sentiments he had just expressed concerning poachers, he walked up to Lionel Gaskell—for he of course it was—and in a voice of thunder said: 'Confound you, sir, what do you mean by trespassing on other people's property—and in uniform too, and with a sergeant's stripes! Why, you can't have been in the place half a day, and yet you are up to your old tricks again! Look here; I'll'——

'I beg your pardon, colonel,' interposed the intruder with a smile. The smile irritated the colonel beyond measure, and he again uplifted his cane.

'Hear what he has to say, colonel,' whispered Gillian, who was longing to spring forward into the arms of her lover.

'I was only going to remark, sir, that you don't appear to remember me,' said Lionel calmly.

'Remember you! Not likely, when I've sent scores of sham soldiers like you to prison for poaching!' said the colonel.

'Ah; it was quite dark when you left the field of Waterloo,' said Lionel.

The colonel started, and the cane dropped from his hand. 'Why—what—how—explain yourself!' he stammered. 'Surely you can't be'——

'Lionel Gaskell of Hingleton, at your service,' said the young sergeant, again bringing his hand to the salute.

'Why, I'm in a dream. Lionel Gaskell was killed at Talavera; I've seen his death certificate,' said the colonel. 'Yet, the brave fellow who saved my life said his name was Lionel Gaskell.'

Gillian could restrain herself no longer, but rushed forward and threw herself into Lionel's arms, whilst the colonel looked from one to the other with the utmost perplexity.

'Yes, colonel,' she said, 'this is Lionel Gaskell, and he it was who saved your life; and, colonel, I may as well admit that I am betrothed to him.'

'Well, it's a most wonderful world,' exclaimed the old soldier. 'First of all, a man who has been killed at Talavera comes to life again; and then a girl who used not to stir from home, declares she's betrothed to him!'

'Oh, but I've known Lionel a long time, colonel,' said Gillian; 'and this is the very spot where we met and fell in love with each other.'

'But how about that death certificate?' asked the colonel.

'Perhaps Mr Trent can tell you more about it than I can,' said Lionel. 'At anyrate, I'm Lionel Gaskell, and Miss Ramsden is my betrothed.'

'Well, sir,' said the colonel, 'all I can say is that I heartily congratulate you, not only upon winning such a good, true, kind-hearted lass, but upon having saved her from the clutches of that sneaking, soft-speaking, double-dealing rascal of a lawyer. I owe you a debt that I can never repay; but if you never have another friend in life, you'll have one in me.—And now, let's go home and astonish the squire.'

'One moment, colonel,' said Lionel. 'You said just now that you owed me a debt you could never repay. If you will not broach the subject of my father's will to the squire, I shall consider it as full payment, if I can call a return made for doing what any other man would have done under the circumstances, payment.'

'But, my dear sir, justice must be done. That rascally lawyer has deceived the squire and all of us.'

At that moment, a dark figure came between the talkers and the sunlight, and Squire Ramsden stood before them. 'No, colonel,' he said, 'Trent did not deceive me. Now that all is over, I may unburden myself of a terrible weight, which has oppressed me unceasingly during the past five years, and yet which I have not had the moral courage to throw off. I have been all this time a wretched impostor, occupying a position which is no more mine than it is yours. The man before you is the original Lionel Gaskell, who was reported dead. I have only seen him once since his return from the Peninsula, and that was a month ago, when I sentenced him to two years' imprisonment for a crime he did not commit.—Don't spare me. Trent is wicked, but I have been as bad. It was he who suggested to me, when I was a poor struggling clerk, that I might succeed to the inheritance of Hingleton if I allowed him to pull the wires. He named his price—the hand of Gillian—and I agreed. He produced a certificate of the death of Lionel

Gaskell. The news almost broke the heart of the poor old squire, who had been fretting about his only son ever since he enlisted and went abroad; and he altered his will in my favour. That is the whole of the disgraceful story, except that the poaching affair was a trap laid by Trent to get Lionel into our hands. I've no more to say. My Gillian will be happy with the good brave husband she has chosen, and I can go away and hide myself from the world.' As he spoke these words, his stalwart frame shook with emotion, and tears filled the eyes that had never been dimmed since the death of his wife long years before.

'No, no, papa!' said Gillian, embracing him. 'We all forgive you. No one need know any more about the matter, and we can all be happy together.'

'Amen!' cried the colonel. 'But that blackguard lawyer—he mustn't be allowed to get off. I should never cease reproaching myself, if he didn't get his deserts.'

'Don't trouble about him, colonel,' said Lionel; 'it isn't worth his while to show himself in Hingleton. They half-killed him last night by drenching him under the pump and pelting him through the streets.'

That the wedding of Lionel Gaskell with Sweet Gillian was celebrated with such festivities and rejoicings as the oldest Hingleton inhabitant could not recall, need not be said. Edward Trent disappeared from the place, and was never seen or heard of again in these parts; and although the squire could not be the same man that he was, he showed himself as affectionate a father to the young married couple as Colonel Adamthwaite proved himself a trusty friend. Lionel's name appeared in the papers as gazetted to a commission 'for distinguished gallantry in the field;' but his future military duties were confined to work with the Fenshire militia, and he settled down as a country gentleman of the most popular type.

THE MONTH:

SCIENCE AND ARTS.

Any thoughtful visitor to the International Inventions Exhibition at South Kensington will soon perceive that it fulfils a great want. There are hundreds of useful inventions which are patented every year, but which the majority of persons only read of in paragraphs in the daily journals. It is true that much more can be learnt about them by reference to the technical periodicals; but after all, the readers of such papers are comparatively few, and fewer still are they who seriously take the trouble to understand what they read, unless the matter be of particular importance to their own welfare. But at an Exhibition like this, the various inventions are seen, and in most cases in actual operation. People are interested in spite of themselves, and in this way an Exhibition like the present becomes a powerful aid to that kind of solid education which is seldom acquired until long after school-days are past.

It is a melancholy sign of the times that one of the first things to arrest attention upon entering the doors of the Exhibition is a collection of weapons of war. Here we see huge guns of the latest construction, together with specimens of their deadly charges. Gunpowder in its various forms is here, from the polished grain as fine as mustard-seed, to the heavy lumps, nearly as large as an egg, which are used as food for Woolwich 'infants.' As we look upon these things, we remember with something approaching to awe that they are infants indeed compared with the giant guns now being constructed for naval warfare. There are now being manufactured at Woolwich some one-hundred-and-ten-ton guns for Her Majesty's ship *Benbow*, the projectile of which will be sixteen and a quarter inches in diameter, and will weigh nearly two thousand pounds. The charge which will be employed to send this enormous mass of metal on its terrible mission will be nearly one thousand pounds of powder. These new guns will be the most powerful ever made, and will considerably eclipse the celebrated one-hundred-ton guns made some time ago for the Italian navy.

Among the far more pleasant inventions to contemplate—those relating to the arts of peace—may be noticed a working model of the Telpherage System. The object of this invention, as stated in the prospectus, is to convey minerals, ores, slate, grain, roots, manures, or in general any goods easily divisible into parcels of from two to five hundredweight, at a speed of about five miles an hour, and at a cost greatly less than that of cartage. In this system a wire-rope is suspended on uprights at short intervals. Hanging to it and resting upon it by grooved wheels is an electric motor, drawing a train of vehicles, whose principal feature is a metal-receiver for the reception of the material conveyed. In the model, the little train runs round hour after hour on its endless railway, and demonstrates most effectually the efficiency of the system. We understand that an experimental line of about a mile in length is in course of construction, and we shall look forward with much interest to the results obtained by it.

We have before referred to the Patent Agricultural Engine for burning straw and other vegetable substances as fuel. In addition to this engine, Messrs Ransomes, of Ipswich, exhibit an apparatus for chopping, bruising, and softening the straw for hot countries, adapted to a steam thrashing-machine. We may explain that in all hot countries, hay is but little grown, and the cattle are fed almost entirely upon straw, which, being much harder than that grown in colder countries, cannot be converted into fodder in the usual way by a chaff-cutter, as the sharp edges produced injure the mouths of the animals. Until the introduction of this invention, it was therefore found impossible to use steam thrashing-machines in these countries, and farmers had to adhere to the process of thrashing out the grain from the straw by driving cattle over the sheaves placed upon the earth. The results produced by this invention enable the farmer to obtain all the advantages attending the employment of steam for thrashing, in point of speed and economy, in addition to which he secures a better price for his corn, owing to its being perfectly

clean; the cattle also thrive better on the straw bruised by this apparatus, on account of its freedom from dirt, which cannot be obtained by the old process of treading out the grain with horses or cattle.

An interesting feature of the Exhibition is the prominence given to various new methods of burning gas. Several of the new burners are on the regenerative principle, first introduced by Dr Siemens, in which the gas and air are heated before being consumed, and the products of combustion are also consumed. The light given is beautifully pure and white. The heat given off by some of these burners we fancied was rather excessive; but it is a heat uncontaminated with any noxious fumes, and would be an advantage during that time of the year when gas is most required. We some months ago commented in this *Journal* upon the advantage of placing an ordinary gas-burner at an angle, so that its flame should be almost horizontal instead of vertical. It is noticeable that most of the new burners adopt the principle of the inverted flame, thereby securing a better light and doing away with troublesome shadows cast by the fittings.

One little unpretending contrivance called the 'Air-brush' particularly attracted our attention. It is intended as an aid to artists, and it gives with very little manipulation the same effect that would require much work with the stump and chalk. It consists of a foot-blower to maintain a steady stream of air, attached to which is an india-rubber tube in connection with the brush. This last contains a receptacle for liquid Indian-ink, which is blown upon the drawing-paper in a fine stream, which can easily be regulated by the pressure of the finger upon a loose plate. The work done with this brush is very soft and beautiful; and we can only regret that we failed in obtaining the name of the inventor, or any other particulars regarding his ingenious production.

An Italian doctor has lately asserted that the workmen in borax factories appear to possess a charm against the attacks of cholera. During the terrible epidemic of 1864-65, the workmen in seven contiguous factories in Italy were quite free from the disease which killed off one-third of the population of a village in their immediate neighbourhood. He recommends the internal administration of borax as a specific for cholera in doses of five grammes (seventy-seven grains) each day. He believes that it not only destroys the microbes in the intestinal canal, but also in the blood.

An old subscriber maintains that in cases of cholera one of the best disinfectants known is the oil of tar, which is obtained by distillation from the tar of the pine-tree, and is that portion of the oil that contains medicinal creosote, having the property of preventing putrefaction. The tar in the crude state is used in the fever hospitals on the continent, and as it is neither poisonous nor unhealthy, no one need fear to use it. If during the early stages of cholera, a mixture of laudanum catechu and kino is administered, in most cases the patient recovers.

According to a writer in the *Scientific American*, the casting of oil upon troubled waters can often be seen in some districts as an operation of nature. There is a fish called the 'Menhaden,' which is, like the pilchard of Cornwall, of an extremely oily nature. It forms the food of the blue-fish, the shark, and many other denizens of the ocean. These will follow their prey for miles, and as the victims are bitten through, the oil rises to the surface of the sea, and makes large patches of smooth water. The fishermen are thus advised where to cast their nets; and the writer asserts that he has seen more than one thousand fish taken at a single haul from one of these patches of oil-covered water. He also states a case in which a stranded whale, rubbed by the action of the breakers against the sand and shingle, has parted with enough oil to make a smooth track out seawards more than a mile in breadth.

A curious discovery is said to have been made in the heart of the town of Dumfries. Some workmen excavating the ground at the gas-works came upon a bed of peat containing various trunks of trees, including a Scotch fir six feet in height, with the bark still upon it. Nuts, cones, broken antlers, and other remains were also found in the peat. Some of the smaller plants have been placed in moss under glass, and have actually begun to germinate after being hidden for untold centuries. The peat rests upon a bed of conglomerate in which large pieces of red granite have been found, although no rock of that description is common to the neighbourhood. It is believed that in past ages the spot was the site of a loch.

Two scientists at St Petersburg have published the conclusions at which they have arrived relative to the augmentation of the earth's mass by the meteors which are attracted to it from space. They assert that a single observer will see on an average ten meteors every hour; but as such an observer only can review a very small portion of the sky above his horizon, this number must be but a fraction of the entire quantity which reach the earth. They place the total number at four hundred and fifty thousand per hour, and the weight at nearly five thousand pounds. According to this estimate, the earth is receiving hourly a present of more than two tons of foreign material; an addition indeed, which, when compared with the mass of the globe itself, is quite inappreciable.

The correspondent of a New York paper gives an instructive account of the manner in which a steam-boiler may be seriously injured by the presence of certain kinds of grease within it. In the case alluded to, a comparatively new boiler was found suddenly to exhibit a bulge in one of its plates. The matter was at once inquired into. It was found that the boiler had been cleaned the previous week, and that in the process a quantity of black oil of unknown composition had been thrown into it. Examination showed that the boiler was saturated with grease produced from this oil, and that the grease had caused the bulge, which would have been a fracture if the plates had not been made of first-class material. The theory suggested is this: the oil did not dissolve, nor did it mix with the water, neither did it remain floating on the surface. But it formed into thick masses of sticky material, which eventually attached themselves to the boiler-plates, and made a varnish-like coating upon them. The plates, therefore,

not being touched at all by the water, became overheated and softened. The pressure of the steam then caused one of the plates to exhibit an outward bulge, which was luckily detected before an accident occurred.

Some special apparatus has been constructed at the Paris Observatory for obtaining celestial charts by means of photography. The results of preliminary trials of this apparatus have been reported to the Academy of Sciences; and it is said that the problem of making celestial charts of undoubted accuracy, which will include all stars down to the fifteenth magnitude, has been most satisfactorily solved. It will interest many to know the different times of exposure of the gelatine plate necessary for stars of different magnitude. Thus stars visible to the naked eye will impress their image on the sensitive plate in less than one second of time. This period is gradually increased for the fainter orbs, until we reach those of the fifteenth and sixteenth magnitude, which require the photographic lens to remain uncovered for about an hour and a half.

In Mr Sophus Tromholt's new and interesting work on Lapland, *Under the Rays of the Aurora Borealis*, may be found the best and most exhaustive account of auroral phenomena which has yet been published. He tells us that Southerners have the most exaggerated idea of the light emitted by the aurora, and that it is quite a mistake to suppose that it greatly assists the dwellers in northern climes either on their journeys or in their work. The greatest amount of light emitted by the aurora may be compared to that of the moon two days and a half after full when twenty-five degrees above the horizon and the sky clear. Bearing this in mind, it will excite no surprise to learn that every attempt made by Mr Tromholt to photograph the aurora utterly failed. Although he used the most sensitive dry plates and exposed them for long periods of time, he did not succeed in obtaining the very faintest trace of a negative. The author of this well-written book is a skilful photographer, and his work is abundantly illustrated with pictures taken direct from his photographs by a process that does not need the intervention of the engraver.

Professor Milne, of the Imperial College of Engineering at Tokio, Japan, has once more published the results of some of his valuable observations concerning the effects of earthquakes upon buildings, together with some suggestive remarks upon the type of building which should be adopted in earthquake countries to withstand earthquake shocks. In a recent number of this *Journal* (page 224) we gave some results of his observations for the past year. He has now published the results of some additional observations, in which he noted the effects produced upon an experimental earthquake-proof house, the chief feature in which was the peculiarity of its foundations. At each corner of the house was a plate of iron with a depression in it like an inverted saucer. Underneath these four depressions were four large cannon-balls, which formed feet for the house to stand upon. For many reasons, one of which was the movement produced by a high wind, Professor Milne has abandoned this model, and has now had his house so arranged that at each contact with the earth it rests upon a handful of cast-iron shot, the size of buck-shot. The result gained is that during an earthquake shock the motion to which the house is subjected is only one-tenth of what is experienced by its surroundings.

We have already alluded to the praiseworthy attempts which have been made during the past year to stimulate the invention of original designs for the different fabrics which come under the head of Irish lace. We are now glad to report that prizes to the value of seventy guineas are offered for a competition at South Kensington Museum. The prizes are to be given for seven different classes of Irish lace or linen-work, and the whole scheme is under such distinguished patronage that the worthy object for which it was devised is likely to be fully realised.

Mr W. Powell's account of *New Britain and the Adjacent Islands*, recently read before the Society of Arts, London, was full of information about a part of the world of which few people knew even the existence, until annexation by Germany made it famous. According to the lecturer, we need not envy a friendly power her acquisition, for the climate of the islands is such as to forbid Europeans making a residence there without contracting malarious fevers. The chief interest of the paper centred in the details given concerning the manners and customs of the inhabitants. A husband has there absolute command over the wife he has purchased; and a case was related in which the wife of a chief who would not work was killed, cooked, and eaten by her affectionate spouse! The native doctors bleed for every ailment, and it is not an uncommon sight to see a native covered all over with memorials of their work. When sufficient blood has been drawn, the gashes in the flesh are stopped up with burnt lime!

Another paper of a very different kind was brought before the Royal United Service Institution by Mr Gower, who is well known in connection with the form of telephone which bears his name. The object of Mr Gower's paper was to show that the torpedoes which form such an important part of naval warfare can be used by armies in the field. For this use they must be transferred from the water to the air; and balloons are the means suggested for carrying them over and dropping them into an enemy's lines. In the discussion which followed the reading of the paper, the lecturer's ideas did not meet with much encouragement. Sir F. A. Abel, whose duty it was as chairman to sum up the pros and cons of the system advocated, showed that the area of destruction of the explosives recommended was exceedingly limited; and as a proof of the truth of this, he pointed to the recent dynamite outrages in London.

In the *American Chemical Journal*, Messrs Chittenden and Cummins describe some experiments which they have been making with a view to determine the relative digestibility of various foods. They employed as a digester an artificial gastric juice composed of hydrochloric acid and pepsine. Expressing the digestibility of beef by one hundred, the other meats

experimented upon have the following figures attached to them: mutton, ninety-two; veal, ninety-five; chicken, eighty-seven; salmon, ninety-two; mackerel, eighty-six; haddock, eighty-two; trout, seventy-eight; lobster, eighty-eight; cod, seventy-two. The experiments showed that raw meat was more digestible than cooked, and that, with few exceptions, light meat was more so than dark meat.

We have to record the establishment of a new association which has been formed under the title of 'The Society of Medallists,' to encourage and cultivate the art of making medals. The Committee include several well-known gentlemen whose names are familiar at the Mint, the Royal Academy, and the British Museum. The Society will shortly contribute an exhibit of Modern Machinery and Appliances for making Medals to the Inventions Exhibition, where space has been placed at their disposal.

Last February, the steamer *Alphonse XII.* struck on a reef of rocks at Las Palmas (Canary Islands) and became a total wreck. The ship, which carried the large sum of one hundred thousand pounds in specie, now lies in thirty fathoms of water. An attempt will presently be made by divers to recover the precious freight. A number of English divers have left Liverpool for the scene of the wreck, and every hope is entertained that they will be successful in their work. Their great difficulty will be the enormous pressure to which their bodies will be subjected at the depth of one hundred and eighty feet, a distance from the surface of the water considerably greater than that to which divers usually descend.

The extension of business likely to accrue to the Post-office from the introduction of sixpenny telegrams is estimated to be thirty per cent. for the first year. The change of tariff has called for additional lines, which have already been laid at a cost of half a million of money; but this sum includes the erection of sundry buildings and plant of various kinds. The increase of the staff throughout the kingdom will amount to more than two thousand, half being messengers, and the other half telegraphists.

The Report of the Committee appointed to consider the law relating to telegraph and telephone lines has been received. The Committee consider that the alleged danger of overhead wires has been greatly exaggerated, but admit that such wires should be placed under better supervision. They fear hampering the extension of telephonic communication, which is of such great public importance, by recommending any course which would interfere too greatly with the present system of fixing wires. Here they are undoubtedly right; for it is clear to every impartial mind that telephonic communication is already so hampered with restrictions, that the numbers of persons availing themselves of it are few in comparison to what they might be. 'There are more subscribers to the telephone system in New York and its neighbourhood than in the whole United Kingdom, notwithstanding that the charge in New York is about double what it is here.' This is an extract from the evidence of Mr Preece given to the above-named Committee. It needs no comment, for it shows most conclusively that there is a screw loose somewhere which requires adjusting.

At a recent meeting of the Royal Scottish Society of Arts, Mr William Sturrock, jeweller and watchmaker, St Andrew Square, Edinburgh, exhibited an automatic twenty-four hour dial for clocks and watches, invented by himself and Mr John Meek, his assistant. It showed the disc of an ordinary dial, having slots and a movable disc behind, on which were the hours from 0 to 24 alternately. It was explained that during the first part of the day 0 to 12 were shown on the dial, which then changed automatically, and the hours from 12 to 24 were shown. When the end of this second period of time was reached, the dial went back to its original position; and it was claimed that this simple arrangement prevented confusion in reading the time. A new escapement for electric time-indicators was also shown by Mr Sturrock.

The Museum of Northern Antiquities in Copenhagen has just been enriched by a remarkable discovery, made at a small place near Thisted, on the west coast of Jutland, Denmark. Two men digging in a gravel pit in the neighbourhood of an old burial-mound, called Thor's Mound, struck an earthen vessel with their picks, disclosing a number of gold pieces. On examination, it was found that an earthen vessel, of about seven inches diameter at the rim, and covered with a flat stone, had been buried about a foot and a half below the surface, and this had contained about a hundred little golden boats, curiously worked, varying in size from three to four and a half inches. A gunwale and frames of thin strips of bronze had first been formed, and these had been covered with thin gold plates, some of which were further ornamented with impressions of concentric rings. The boats, of which only a few are in a fair state of preservation, are tapered at both ends, and resemble the Danish fishing-craft of the present day.

This discovery, which may be regarded as a deposited treasure of votive offerings, and belongs doubtless to the close of the Bronze Age, proves that frame-built vessels were already known at that time, and that man was not satisfied with the hollowed-out trunks of trees. The gold of which these little fishing-models are composed was valued at twenty-seven pounds sterling, which amount, together with a gratuity, has been forwarded to the finders, who are both poor men.

An ingenious invention is reported from the Cleveland Machine Company, United States, and that is an auger which will bore two-inch *square* holes. This machine works on the same principle as the auger used for round holes. Instead of having a screw or bit at the end, it has a cam-motion which oscillates a cutter mounted on a steel rocking-knife which cuts on both sides. The ends of the cutter are provided with small semicircular-shaped saws, which help the cutting out the square corners, and prevent the splintering or splitting of the wood. Much time and labour will be saved by this clever process, for a square mortise can be cut by this plan in no more time than was required to cut a round one.

The *Standard* correspondent at Madrid says:

'The defence of Dr Ferran and his inoculation as a preventive of cholera has been very warmly taken up by a majority of the newspapers and by some medical men, who consider the conduct of the government arbitrary. Dr Ferran began inoculation in March, and operated upon six thousand five hundred persons; other surgeons inoculated a large number. He believes that a single inoculation is often a sufficient preservative, but he recommends a second, and even a third experiment, as not a single person who has been inoculated has died of cholera. The greatest care must be taken to examine the virus used, with a microscope, to ascertain if it is sound, and if no other element or microbe has got mixed with the cholera vaccine. Dr Ferran expressed the belief that the incorrect local reports, and his well-known opposition to antiquated sanitary rules and quarantines, had led the Home Office and the Supreme Board of Health for the present to suspend inoculation; but he will accompany the Royal Commission when it is sent to Valencia. Should further experiments be stopped, Dr Ferran will visit Paris and London. His earnest desire is to be allowed to go to the East, and especially to British India and the Ganges Valley, to try his experiments in the cholera-stricken districts in those lands.'

MY VEILED CLIENT.

At the time of the incident I am about to relate, I was a young solicitor, with no very considerable practice, and therefore not always so discreet as I might have been, had I been able to pick and choose my clients. My business hours were ostensibly from ten to five; but the fact of my house adjoining the office made me subservient to the wishes of the public beyond the time stated on the brass plate at my office-door. In fact, it was generally after business hours that my most profitable clients came; and though I can say I refused many a time the agency of some shady business, still, I must confess with regret that once or twice I found myself unwittingly involved in transactions which I would have much rather left alone. One of these I have occasion to remember too well, and I can never think of it but I thank Providence for saving me from becoming an accomplice unwittingly in a most audacious piece of imposture.

I was interrupted one night at tea by the servant entering and saying that a lady wished to see me. Hastily finishing the meal, I hurried into my business room. As I entered and bowed, a lady rose, made a slight courtesy, and remained standing. I begged her to be seated, and asked of what service I could be to her. It was a little time before she answered, and then it was in a nervous, frightened way, glancing round the room as if she were afraid somebody else was present. I saw that, although she was dressed in good style, she had not the air of a lady; but as she wore a thick veil, I could not distinguish her features, though I made out a gray hair here and there.

'I suppose I had better explain who I am and what I want,' she began. 'I am Miss Howard of Graham Square, and I want you to make out my will.'

I started involuntarily, for this elderly person, though I had never seen her before, had been the subject of many a surmise and many a gossip with the neighbours. She was reported to be very wealthy; but had apparently abandoned the world, for, during the last five years, she had shut herself up in her house, seeing no one but her servants. My curiosity was therefore piqued at the idea of making out this old eccentric's will. Taking up a pen, I asked her to give me the particulars of how she wished the property disposed of.

'That is very simple,' she said. 'I wish my whole property to go to Mr David Simpson of Stafford Street here. I have never been married; and I want the will framed so as to cut off any heir who might claim relationship to me. I also wish you to act as my executor in seeing my will carried into effect.'

I made a note of the instructions, and asked when it would be convenient for her to call and sign the deed.

'If you could have it written out by to-morrow night, I could call then and sign it. I would like if you could arrange to have a doctor present to be a witness to my signing—a young doctor, if possible.'

'Certainly, madam. To-morrow night at this time will suit, and I will arrange about a doctor being present.—Is there nothing else you wish mentioned in the will?'

'No; nothing,' she said, rising. 'But be sure you make it so as to cut off all relations.'

I assured her everything would be as she desired; and after assisting her into the cab which was waiting, noticing the while that she had a slight limp in her walk, I retired to my study to frame the will in accordance with my instructions. Next night, punctual to a minute, she called; and as I had a doctor present, the ceremony of signing was soon over, the doctor signing as a witness along with my clerk, and appending a certificate of sanity, as desired by my client; and the deed was consigned to my safe.

The affair had almost completely passed from my mind, when I was startled one morning by receiving a note from Mr Simpson the legatee in the will, informing me that Miss Howard was dead. I immediately proceeded to the house, performed the usual duties devolving upon a solicitor in such circumstances, and made what arrangements were necessary. After the funeral, I had a meeting with Mr Simpson, and explained to him the position of affairs—that he was sole legatee, and that I was executor. He seemed to take the matter very coolly, I thought, but was anxious that everything should be realised as soon as possible. Our interview was very short; and I came away with a strong feeling of dislike for the man, who, I found, had acted as a sort of factor for the deceased lady.

Acting within the duties of my executorship, and also with a desire to find out if possible the relations the old lady had been so anxious to cut off, I inserted a notice of her death in most of the leading newspapers in the kingdom. This had the desired effect; for in the course of a few

days I was waited upon by a young gentleman, Edward Howard, who informed me he was a nephew of the late Miss Howard, and had called upon me, having got my name and address from the office of one of the newspapers to which I had sent the advertisement. During my interview with Mr Howard, I was much impressed with his bearing on my telling him the position of affairs, as he was much more concerned at his aunt's death than at the purpose of her will. He told me that five years ago he had married against his aunt's wishes; she had refused to recognise his wife; and though he had written her several letters, he had never heard from her in reply. He thanked me for my information, and said he would likely see me again, as he was coming into town to a situation he had just been offered.

Some weeks after this, as I was returning home in the evening from a consultation, my attention was arrested by the figure of a woman in front of me. She was hurrying along as if trying to escape observation; but there was something in her style and the limp which she had, that struck me as familiar, though I could not remember where I had seen her. Just as she was passing a lighted part of the street, she happened to look round, and the face I saw at once explained to me the familiarity of her figure —both face and figure being an exact counterpart of my late client's, Miss Howard! Somehow or other, a suspicion flashed across my mind; my instinct told me something was wrong, and I determined to follow her and see where she went to. Pushing my hat well over my brow and pulling the collar of my coat well up, I followed through two or three streets, and was almost at her heels when she suddenly turned into a public-house, when, so close had I followed her, I heard the attendant say in answer to an inquiry by her, 'Number thirteen, ma'am;' and I saw her disappear into the back premises. I immediately followed, heard the door of number thirteen shut, and glancing at the numbers, quietly opened number twelve, and after giving an order for some slight refreshment to the attendant who had followed me, I took a hasty look around the room.

I found it was divided from the next one only by a wooden partition, which did not reach the ceiling, and that, by remaining perfectly quiet, I could hear that a whispered conversation was being carried on in the next room. The entrance of the attendant with my order disturbed my investigations; but on his departure, and regardless of the old saying that listeners seldom hear anything to their own advantage, I did my best to make out the conversation. I distinguished the voices to be those of two men and one woman. The latter I at once recognised, or at least my imagination led me to believe to be the voice of the person who had called on me a year ago to make her will. The voice of one of the men was strange to me; but after the discovery I had already made, I was not greatly astonished at recognising the voice of the other man to be that of Simpson, the legatee in the will. The whole thing flashed upon me at once, and I saw I had been made the innocent machinery for carrying through a clever and daring piece of imposture. I, however, listened attentively to the conversation, in order to fathom the whole affair.

The first sentence I made out came from the stranger: 'I told you young Sinclair was the very man to do the work for you. These young lawyers never ask any questions as long as they get the business.'

'Well, well,' said Simpson, 'that is all right now. But the present question is, what is to be done in the way of hurrying him up with the realisation of the estate without exciting suspicion? The sooner we all get away from this, the better. I am glad that young fellow Howard didn't ask any questions. But one thing's certain, we must get the old woman away from this immediately, or she's sure to get recognised. She's been keeping pretty close lately; but I daresay she's getting tired of it.—Aren't you, old lady?'

'Indeed,' was the reply, 'I would be glad to get away from this place to-morrow, if I could. I'm sure I only wish you could have been content with half of the estate with Mr Edward, instead of burning the will, when you found it was to be divided between you and him, and getting me to do what I did. I'm sure it's a wonder my mistress doesn't rise from her grave to denounce us all.'

'Keep that cant for another occasion, old woman; it's no use getting religious now.—But I'll tell you what—I've got an idea.'

Here the conversation got so low, that I could not catch more than an occasional word, and what that idea was I never found out, as he never got the chance to try it on me, for I had heard enough to know that next door to me were three of the most daring conspirators I had ever come across, who had duped me, and made me, though unwittingly, the chief actor in the conspiracy. My first idea was to lock the door of the room they were in, and go for help; but as that was likely to cause a disturbance, I determined to slip out and trust to being back in time for their arrest. As luck would have it, nearly the first man I met outside was a detective, whom I had known very well in connection with some criminal trials in which I had been engaged. A few words explained my purpose; and signalling to the nearest policeman, he placed him at the door of the shop, and both of us walked in. He nodded familiarly to the bar-tender, and leaning over the counter, whispered in his ear. The shopman started, and gave vent to a long low whistle.

'You'll do it as quietly as you can, for the credit of the house,' said he.

'Of course,' said the detective. 'Show us in.'

In another minute we were inside the room, with our backs to the door, the detective dangling a pair of steel bracelets and nodding smilingly round the room. The woman fainted. We had no difficulty in securing the men; and in half an hour we had them safely housed in jail.

Before their trial came on, we had worked out the whole story. The woman who had called on me and signed the will was Mrs Simpson, Miss Howard's housekeeper, the mother of Simpson in whose favour the will was made; and the other man was a lawyer's clerk who

had suggested to them the feasibility of such a scheme. The fact of Miss Howard's self-confinement and my own imprudence had nearly made the plot a success, but for my accidental recognition of the housekeeper. Each of the prisoners offered to turn Queen's evidence; but as we had no difficulty in proving the case, this was refused, and they were sentenced to various periods of penal servitude. I had then the pleasure of handing over the estate to the rightful heir, young Edward Howard, who, notwithstanding that I had nearly been the means of depriving him of his inheritance, made me his agent.

The estate turned out to be much larger than I had at first thought, as I succeeded in proving that a large number of investments in Simpson's name really belonged to Miss Howard, and the management of so large a property fairly put me on my feet as regards business. I have had many good clients since then, but I have often thought that my Veiled Client was my best one, as she was the means of giving me my first lesson in prudence, and my first start in life.

OCCASIONAL NOTES.

LIQUID FUEL FOR MARINE PURPOSES.

LIQUID fuel, in the shape of petroleum waste, is extensively used instead of coal on Russian railways, and the steamships in the Caspian use nothing else. Crude petroleum, after a few days' exposure to the air, can be used with safety for the same purpose. At Baku, on the Caspian, there are about four hundred petroleum wells; and this waste fuel can be delivered at Batoum at twenty-six shillings a ton. Weight for weight, petroleum goes nearly three times as far as coal; the latter being dear and the former cheap, is good reason for its extended use in the neighbourhood of the Caspian. Petroleum and its products have been successfully used in the United States as fuel in the manufacture of iron; and in the valley of the Euphrates near Mosul, petroleum is used in burning lime. Illuminating oil and naphtha stoves are in common use; owing to their dangerous character, however, some are of opinion that naphtha stoves should be prohibited. Mr Marvin, in his account of the petroleum region of the Caspian (*The Region of the Eternal Fire*, 1884), says 'so simple is the fuel to use, and so reliable is the action of the pulveriser (a jet of superheated steam), that the English and Russian engineers running the steamers from Baku to the mouth of the Volga, having turned on and adjusted the flame at starting, concern themselves no more about the fires until they reach their destination in a couple of days' time.'

Recently, at the Royal United Service Institution, Whitehall, a paper was read by Admiral J. H. Selwyn on the subject of the substitution of liquid fuel for coal on ships at sea. Admiral Selwyn reminded the older members of the Institution that twenty years ago he drew attention to the enormous value of liquid fuel for the royal and mercantile marine, and said that he had the mortification of seeing the subject, which was neglected by this country, taken up by other nations, especially Russia. He stated that by the use of liquid fuel a vessel could carry twice as much power of propulsion as a vessel with coal; and he commented on the disadvantages which would arise to British vessels in having to meet opponents which could use double powers in escaping without the aid of resorting to a fuel station. He related the results of experiments, and proceeded to state that his object was to enforce a greater economy of fuel, which could be effected without any of that large expenditure often a necessary concomitant of radical changes. To burn liquid fuel instead of coal required no change in engines or boilers, and only such adaptation of the furnaces as could be readily carried out in each ship by her own artificers and engineers. At the same time, it removed the necessity for a whole army of stokers and coal-trimmers. It enabled a ship to receive her fuel with the greatest facility at sea or in harbour, while proceeding under steam or even sail; was without nuisance of dust or ashes; and was not liable either to spontaneous combustion or deterioration by time, heat, or moisture. If the ship got on shore, it could be run out to lighten her, or pumped out into lighters with a speed and facility unapproachable with coal; and lastly, if, as he believed, forty-six pounds of water could be evaporated with one pound of fuel, full steaming for twenty-four days could be carried on where now it was limited to four. Thus each ship would be six times as effective as now. In conclusion, he pointed out that the annual vote for the navy amounted to about eighteen millions, of which six millions would be devoted to the ships and their crews. If each ship was made twice as efficient—that was to say, could remain on her station twice as long as before, by reason of a change in her fuel which gave her that power—this might be considered as affecting the value of the whole fleet to the extent of twelve millions per annum.

ASTRONOMICAL PHOTOGRAPHY.

The use of photography (says a correspondent of the *Times*) by the astronomer may be said to have begun in 1850, when G. P. Bond took pictures, by the daguerreotype process, of the moon and some of the brighter stars with the large refractor of the Harvard College Observatory in America. Within the last eight years, the great improvement in photographic processes, resulting in the gelatine dry plate, and the perfection to which this dry plate has been brought, have so changed and increased the power of photography, that the astronomer has now within his reach a new method of observation and record of such marvellous power, that had it been suddenly brought forward, instead of being the growth of years, it would have been hailed with almost as much delight and enthusiasm as the invention of the telescope itself.

There are many ways in which this new method could be most advantageously used. All the existing nebulæ might be photographed; direct enlargements of the planets and many double stars and of the whole surface of the

moon might be made on a large scale that would be most valuable. There are also investigations that could be undertaken, and there is one very interesting question that photography might be able to answer—that is, whether those spaces in the heavens where the eye and most powerful telescopes cannot see any stars, are really quite devoid of stars or not. By suitable means not very dissimilar to the ordinary camera and lens, or by a proper arrangement of reflectors to the same end, it would be possible to take pictures covering five degrees square, and including with the naked eye stars—all those that have yet been catalogued or charted—at such a rate that the whole heavens could be done in a few years. Experiments already made have shown that on a very small scale stars of 9·8 magnitude are distinctly shown with fifteen minutes' exposure with a relation of focal length to aperture of eight to one.

A comparison of the old and the new method can only be imagined. Professor Peters, of Clinton, has lately published some twenty charts, each covering about five degrees square. These charts have cost years of labour of the hardest kind, and it was during their construction that he found so many of the minor planets. Now, these charts could be made, and more accurately made, in as many hours as Professor Peters has taken years; and by repeating the photographs at intervals of time, and by direct comparison of the pictures with each other, *the minor planets would discover themselves by their motion in the interval.*

IRON AS FIRE-RESISTING.

Some interesting and instructive experiments have been lately undertaken by Professor Bauschinger, of Munich, in reference to the safety of cast-iron columns when exposed to the action of great heat. The professor, having arranged some cast and wrought iron columns heavily weighted, exactly as they would be if supporting a building, had them gradually heated, first to three hundred degrees, next to six hundred degrees, and finally to red-heat; then suddenly cooled them by a jet of water, just as might happen when water is applied to extinguish a fire. The experiments showed that the cast-iron columns, although they were bent by the red-heat, and exhibited transverse cracks when the cold water was applied, yet they supported the weight resting on them; whilst the wrought-iron columns were bent before arriving at the state of red-heat, and were afterwards so much distorted by the water, that re-straightening of them was out of the question. In fact, if supporting a real building, they would have utterly collapsed under the weight they had to sustain. The professor therefore concludes, as the result of his experiments, that cast-iron columns, notwithstanding cracks and bends, would continue to support the weights imposed upon them; whilst wrought-iron columns would not. In experimenting on pillars of stone, brick, and cement-concrete, the last was found to be the best. Cement-concrete pillars withstood the fierce action of the fire for periods varying from one to three hours; brick pillars, as well as those of clinkers set in cement mortar, displayed great resistance; whilst natural stone—granite, limestone, and sandstone—were not fireproof. It would therefore appear that, of the several materials for pillars supporting weights, the best for fire-resisting purposes were the cast-iron and cement-concrete.

POISONS.

Regarding an article on Poisons that recently appeared in our pages, a correspondent writes: 'Too frequently, it seems to me, death from poisoning occurs for want of the proper remedy being quickly applied. Those on the spot are ignorant of it, and while excitedly hunting for it in some medical book, or waiting for the doctor's arrival, the chance of saving life is lost. I would suggest that no poison should be retailed without being accompanied by clear indications of the appropriate remedies to be used in case of mishap, and the treatment to be adopted during or prior to their administration. These instructions might form an integral part of the label in some cases, and where the bottle was too small, could be folded in a small cardboard pill-box sort of appendage, to fit like a cap—or, rather, like a shoe—on the base of the bottle, and which could be made to fit very tightly, or be gummed on the bottle itself. I have heard of the effects of certain poisons being neutralised by swallowing the mortar scraped from the walls, and others by swallowing white of egg; but in too many cases these expedients are known nothing about until it is too late.'

We agree with our correspondent in deeming it expedient that their antidotes, or amelioratives, ought in every case to accompany poisons that are vended to the public. It should be imperative.

LOVE'S SLEEP.

Deep within my lady's eyes
Sleeping Love in ambush lies;
Ne'er before have been invented
Means to make him so contented.
Dost thou dare the lad awake
At thy peril? He will take
Vengeance for his broken sleep,
And thy heart for ever keep.
He hath found a fitting nest,
Let the world awhile have rest.
Have a care, and turn away,
Lest he seize thee for his prey;
If thou rouse him, thou wilt rue it,
And a single glance will do it:
He who meets those wondrous eyes,
By Love's shaft that moment dies.

J. Williams.

The Conductor of Chambers's Journal begs to direct the attention of Contributors to the following notice:

1*st*. All communications should be addressed to the 'Editor, 339 High Street, Edinburgh.'

2*d*. For its return in case of ineligibility, postage-stamps should accompany every manuscript.

3*d*. To secure their safe return if ineligible, All Manuscripts, whether accompanied by a letter of advice or otherwise, *should have the writer's Name and Address written upon them* in full.

4*th*. Offerings of Verse should invariably be accompanied by a stamped and directed envelope.

If the above rules are complied with, the Editor will do his best to insure the safe return of ineligible papers.

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